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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,156	03/27/2006	Makoto Hirano	127194	4890

25944 7590 12/08/2009

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EXAMINER	
FORD, NATHAN K	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
12/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/570,156	HIRANO ET AL.	
	Examiner	Art Unit	
	NATHAN K. FORD	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 9-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 9-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's Response

Acknowledged is the applicant's request for reconsideration received September 8, 2009. Claim 1 is amended; claims 9-11 are new; claims 2-8 are canceled.

The applicant contends:

(1) As Suzuki's wafer detection system is only capable of determining whether the center of a substrate deviates from its central axis, it cannot distinguish such contingencies as when an abnormal substrate falls onto a substrate positioned below, or when an abnormal substrate has cracked and only a portion of it is misplaced. The claimed apparatus can discern these abnormalities and respond accordingly.

(2) Neither Suzuki nor Todoroki teaches the features of newly added claims 9-11.

In response:

(1) The examiner fully acknowledges these deficiencies in Suzuki's wafer detection system relative to the applicant's invention but nevertheless maintains that Suzuki's teachings still satisfy the current iteration of the claims for reasons articulated below. It is worthy of note that in claiming an apparatus through the elaboration of its intended operation rather than its structural constitution, the prior art needs only to demonstrate the capability to reproduce a single instance of the intended operation in order to satisfy the claim limitation. For example, consider a scenario wherein the bottommost wafer in Todoroki's vertical wafer holder is determined by Suzuki's detection system to be abnormal. Furthermore, assume that the wafer above the bottommost wafer has fallen entirely onto the bottommost wafer (this is analogous to contingency *A* as depicted in the Figure 6(a) of the applicant's specification). In this case – noting that Suzuki's system can be programmed to automatically leave in the holder any substrate determined abnormal – the bottommost substrate determined to be abnormal will be left in the holder but so will the substrate contacting the bottommost substrate since it may not even be detected. (Or even assuming that two substrates are detected, the system could easily be programmed to not remove any substrates from a holding site wherein at least one substrate is assessed to be abnormal.) And since the apparatus will remove those substrates deemed intact, the cited prior art is capable of fully reproducing at least one instance of the applicant's recitation of intended use and thus satisfies the claim.

(2) The examiner concedes that the priorly cited prior art does not teach the new material. However, upon further search, new rejections have been submitted and are elaborated below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 9-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation of "a substrate transfer unit that automatically leaves a substrate...in the substrate holder...without requiring a user substrate transfer." As the term is not employed priorly in the claim or in the applicant's specification, it is unclear precisely what the term *user* signifies. The examiner suggests using language commensurate with the specification such as "without needing manual operation," a phrase which appears in paragraph twelve of the applicant's pre-grant publication.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Todoroki, JP 11-054593, wherein machine translation was used, in view of Suzuki et al., US 6,270,619.

Todoroki teaches the following [0015]:

- A substrate treatment chamber (40);
- A substrate holder (20) that can be inserted in the chamber [0018];
  - Wherein the holder comprises multiple stages arranged vertically;
- A substrate transfer unit (30) that conveys the substrates to the holder;
- A sensing device (50) for sensing a holding condition of the substrates within the holder [0020-22];
- A control device (80) which controls the transfer unit [0025, 0033-4].

Upon the detection of a broken substrate, operation ceases until the broken substrate is removed. Since Todoroki's sensing device can only establish that at least one substrate within the holder is broken and is incapable of locating

the specific substrate manifesting the abnormality, time-consuming user intervention is required to identify and remove the defective wafer.

Hence, Suzuki is cited as providing a system which resolves the aforesaid flaws of the primary reference. Suzuki elaborates a semiconductor processing system that avails a cassette (C) for stacking wafers vertically (6, 45-55). Further, a monitoring device (112) attached to the cassette scans each disk to determine not only the holding condition of each wafer but its precise location (7, 14ff). This data is relayed to the operating computer, which in turn communicates with the wafer transfer robot to revise its transport operation as needed (9, 29ff). In this system, the site of the abnormal wafer is known; therefore, merely by programming the control means accordingly, the transfer robot can be rendered capable of removing those wafers disposed above and below the wafer identified as abnormal. A monitoring system capable of precisely identifying the defective wafer provides the advantage of continuing of wafer conveyance even if a wafer or multiple wafers are determined to occupy an abnormal holding condition, thereby eliminating downtime. Hence, it would have been obvious to one of ordinary skill in the art to outfit Todoroki's wafer cassette with the monitoring system limned by Suzuki to enable continuous wafer processing in the event of a broken wafer.

A scenario in which the prior art satisfies the applicant's recitation of the intended operation is elaborated under the examiner's response to the first argument.

Claims 1 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Todoroki in view of Nanbu et al., US 5,565,034.

Claim 1: Todoroki is discussed above. As the reference's sensing device can only establish that at least one substrate within the holder is broken and is incapable of locating the specific substrate manifesting the abnormality, time-consuming user intervention is required to identify and remove the defective wafer.

In supplementation, Nanbu elaborates a semiconductor processing system that employs a cassette (41) for stacking wafers vertically (Figs. 13-15). Further, a plurality of photosensor devices (54-56) scan each wafer to determine its precise holding condition (10, 53ff). This data is relayed to the operating computer, which in turn communicates with the wafer transfer robot (44) to perform corrections (11, 27-46). In this system, the site of the abnormal wafer is known; therefore, merely by programming the control means accordingly the transfer robot can be rendered capable of reconfiguring or extracting those wafers disposed above and below the wafer identified as abnormal. A monitoring system capable of precisely identifying the defective wafer provides the advantage

of continuing of wafer conveyance even if a wafer or multiple wafers are determined to occupy an abnormal holding condition, thereby eliminating downtime. Hence, it would have been obvious to one of ordinary skill in the art to outfit Todoroki's wafer cassette with the monitoring system limned by Nanbu to enable continuous wafer processing in the event of an abnormal wafer.

The scenario articulated in response to the first argument remains valid: If a wafer happened to directly fall onto the bottommost wafer, wherein the bottommost wafer is abnormal, Nanbu's system can simply remove all wafers not inhabiting the holding site of an abnormal wafer. This would leave in place not only the abnormal wafer but also the wafer directly thereon.

Claim 9: Nanbu's sensing devices (53, 56) are disposed on the frame of a transfer unit (46a) (Fig. 13). The prongs (44e) of the transfer robot may constitute the "main tweezers body."

Claim 10: As delineated by Figure 13, sensing element 56a and 56b are disposed on the parallel arms of 53b, which constitute the side face of the transfer body.

Claim 11: Nanbu's sensing device has a first photosensor (56a) which emits a light to a second photosensor (56b).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan K. Ford whose telephone number is 571-270-1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/N. K. F./

Examiner, Art Unit 1792

/Karla Moore/

Primary Examiner, Art Unit 1792